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EXAMINER	
MEUCCI, MICHAEL D	

ART UNIT	PAPER NUMBER
2142	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/773,839	WEERAHANDI ET AL.	
	Examiner	Art Unit	
	Michael D Meucci	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *1, 11-12, 16-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Specification

1. The disclosure is objected to because of the following informalities:

a. The disclosure specifies "link L" between nodes 70 and 80 on page 5, lines 4-5 (2 occasions) in reference to FIG. 1. "Link L" is inconsistent with FIG. 1 which shows link "L3" between nodes 70 and 80. Appropriate correction is required.

b. Remove "is" following "time be" on line 3 of page 12 of the specification.

Claim Objections

2. Claims 1, 11-12, and 16-19 objected to under 37 C.F.R. 1.75(a) because of the following informalities:

a. Claim 1 and 17 recites the limitation "said second delay times." There is insufficient antecedent basis for this limitation in the claim. Examiner believes applicant meant to specify "said set of second delay times." Appropriate correction is required.

b. Claims 11-12, and 16 recite the limitation "the network" in lines 4, 2, and 2 respectively. There is insufficient antecedent basis for this limitation in the claim. Examiner believes applicant meant to specify "the communications network." Appropriate correction is required.

c. Claims 17 and 19 recite the limitation "bandwidth estimator" in lines 8 and line 1 respectively. There is insufficient antecedent basis for this limitation in the

claim. Examiner believes applicant meant to specify "bandwidth estimator program." Appropriate correction is required.

d. Typographical error "receives response a response" on line 12 of claim 17. Examiner believes applicant meant to specify "receives a response." Appropriate correction is required.

e. Claim 18 recites the limitation "said network" on line 2. There is insufficient antecedent basis for this limitation in the claim. Examiner believes applicant meant to specify "said communications network." Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

a. As per claims 1-20, neither the claims nor the disclosure specify how bandwidth is estimated. Since the network (item 10 in FIG. 1) is defined as amorphous and any path for data transfer can be taken, it is not possible to estimate the bandwidth between end point nodes 70 and 80 of FIG. 1 without at least one data transfer between those nodes (70 and 80) because traffic between

any nodes is arbitrary. It is not clear to one skilled in the art as to how the bandwidth between nodes is estimated without at least a one-way data transfer from one node to the other over the path desired to be estimated. One of ordinary skill in the art would be forced to resort to undue experimentation in order to make and use the system and method for estimating bandwidth between two nodes as specified by the disclosure.

b. As per claim 13, the claim, which is dependent on dependent claim 12 and independent claim 11, is not in proper scope in reference to claim 6. The disclosed "estimation in accordance with claim 6" must be specified in whole in claim 13 because claim 6 is dependant on claims 1, 2, 4, and 5, and would force claim 13 to include the limitations of claims 1, 2, 4, 5, and 6. Appropriate correction is required.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction is necessary on the following:

a. As per claims 1-10, claim 1 recites the limitation "estimating the total bandwidth based on said set of first delay times and said second delay times." It is unclear to one of ordinary skill in the art which channel through the network is taken by each set of data packets. Therefore, it is also unclear how estimate the bandwidth of the link between nodes 70 and 80 according to FIG. 1. Additionally,

it will be presumed that all estimation that occurs relates to the link between nodes 70 and 80, using delay measurements in some fashion.

b. As per claims 1-10, claim 1 recites the limitation "the total hop delay" in line 14. There is insufficient antecedent basis for this limitation in the claim.

c. As per claims 2-6 and 8-10, claim 2 recites the limitation "the total packet-size independent delay" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

d. As per claims 2-6 and 8-10, claim 2 recites the limitation "the delay per byte" in line 4. There is insufficient antecedent basis for this limitation in the claim.

e. As per claims 3, and 5-6, regarding claims 3 and 5, the phrase "such as" renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

f. As per claim 3, the term "robust" is a relative term which renders the claim indefinite. The term "robust" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The estimation method is not clearly defined by the relative term “robust.”

g. Claim 3 recites the limitation “the squared residuals” in line 6. There is insufficient antecedent basis for the limitation in the claim.

h. As per claims 5 and 6, claim 5 recites the limitation "the Bayesian point analysis" in line 1. There is insufficient antecedent basis for the limitation in the claim.

i. Claim 7 recites the limitation "the minimum delay for each packet size" in line 2. There is insufficient antecedent basis for this limitation in the claim.

j. Claim 11 recites the limitation "the traffic and router characteristic parameters" in line 15. There is insufficient antecedent basis for this limitation in the claim.

k. As per claims 11-16, claims 11 and 14 recite the limitation "the average available bandwidth" in line 17 and 2-3 respectively. There is insufficient antecedent basis for this limitation in the claim.

l. As per claims 12 and 13, claim 12 recites the limitation "the estimated bandwidth" in line 1. There is insufficient antecedent basis for this limitation in the claim. Examiner cannot distinguish whether the estimated available bandwidth or the estimated average bandwidth is desired to be disclosed.

m. As per claims 17-20, claim 17 recites the limitation "the total bandwidth" in line 16. There is insufficient antecedent basis for this limitation in the claim.

n. Claim 19 recites the limitation "the available bandwidth" in line 2. There is insufficient antecedent basis for this limitation in the claim.

o. Claim 19 recites the limitation "the average available bandwidth" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

a. Claim 1 rejected under 35 U.S.C. 102(e) as being anticipated by Bournas (U.S. 6,201,791 B1).

Bournas discloses generating a plurality of data packets (lines 13-15 of column 6); sending data packets to first node (lines 34-36 of column 5); sending data packets to second node (lines 39-40 of column 5); receiving response message from nodes at remote host (lines 38-39 of column 5); generating delay times for packets to reach the nodes based on the received response messages (item 508 of FIG 5 and 602 of FIG. 6); estimating the bandwidth based on delay times (lines 34-55 of column 7, and items 614-618 of FIG. 6); and estimating the total hop delay based on delay times (lines 34-55 of column 7 and items 614-618 of FIG. 6).

b. Claim 2 rejected under 35 U.S.C. 102(e) as being anticipated by Bournas (U.S. 6,201,791 B1).

Bournas discloses generating estimate indicative of the total packet-size independent delay between first and second nodes (abstract); and generating estimate

indicative of the delay per byte between first and second nodes using a robust estimation method (lines 34-45 of column 2).

c. Claims 8-10 rejected under 35 U.S.C. 102(e) as being anticipated by Bournas (U.S. 6,201,791 B1).

Bournas discloses data packets as ICMP-Echo request, TCP, and UDP data packets (lines 47-49 of column 3). ICMP, TCP, and UDP are all included in the TCP/IP suite.

d. Claim 17 rejected under 35 U.S.C. 102(e) as being anticipated by Bournas (U.S. 6,201,791 B1).

Bournas discloses generating a plurality of data packets (lines 13-15 of column 6); sending data packets to first node (lines 34-36 of column 5); sending data packets to second node (lines 39-40 of column 5); receiving response message from nodes at remote host (lines 38-39 of column 5); generating delay times for packets to reach the nodes based on the received response messages (item 508 of FIG 5 and 602 of FIG. 6); and estimating the bandwidth based on delay times (lines 34-55 of column 7, and items 614-618 of FIG. 6).

It is inherent that the system of Bournas includes memory for storing an operating system and the bandwidth estimator program; a processor for communication between memory, operating system and bandwidth estimator program; and a network interface for sending and receiving data to and from nodes in communication network.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 2 above, in further view of Kratz et al. (Fault detection for time-delay systems by data reconciliation) hereinafter referred to as Kratz.

Bournas does not teach estimating according to a robust estimation method such as the least trimmed squares method. However, Kratz discloses using input estimation and basing the method on the concept of standardized least square residuals (Abstract of Kratz).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to estimate according to an estimation method such as the least trimmed squares method in a time-delay system. The least trimmed squares method is a well known formula and shows proven consistency. It is for this reason that one of ordinary skill in the art would have been motivated to use a robust estimation method such as the least trimmed squares method in the system of Bournas.

b. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 2 above, in view of Malakoff (Bayes Offers 'New' Way to Make Sense of Numbers).

Bournas fails to teach estimating based on Bayesian analysis assuming that the first estimate is correct. However, Malakoff discloses: "The new tools (computers) made the Bayesian approach accessible to a wide range of users, who say it has significant advantages. One is that it allows researchers to plug in prior knowledge, whereas frequentist approaches require users to blind themselves to existing information because it might bias the results," (lines 5-7 of page 3 in Malakoff).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to estimate based on Bayesian analysis assuming the first estimate is correct. Bayesian analysis has been well known for over 200 years and can be very helpful to researchers trying to discern patterns in massive data sets or in problems where many variables may be influencing an observed result (lines 8-9 of page 3 in Malakoff). It is for this reason that one of ordinary skill in the art would have been motivated to estimate based on Bayesian analysis assuming the first estimate is correct.

c. Claims 5 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas and Malakoff as applied to claim 4 above, in further view of Huberman et al. (U.S. 6,115,718) hereinafter referred to as Huberman.

Bournas fails to teach the Bayesian point analysis further assuming a right-skewed distribution such as the inverse Gaussian delay distribution. However, Huberman discloses: "it has been determined that the probability distribution of first passage times to a threshold is given asymptotically by the two parameter inverse

Gaussian distribution [EQUATION] (for EQUATION, refer to column 6, equation (2) in Huberman) with mean and variance (lines 7-16 of column 6 in Huberman and FIG. 3).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to assume a right-skewed distribution such as the inverse Gaussian delay distribution. The inverse Gaussian distribution derived from the law of surfing enables the construction of predictive models of traffic at Web sites (lines 39-41 of column 8 in Huberman). It is for this reason that one of ordinary skill in the art would have been motivated to assume a right-skewed distribution such as the inverse Gaussian delay distribution.

d. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 1 and in view of McKee et al (U.S. 5,477,531) hereinafter referred to as McKee.

Bournas teaches data packet pairs are sent more than once to nodes (lines 13-15 of column 6 in Bournas).

Bournas fail to teach delay times based on the minimum delay for each packet size. However, McKee discloses: "the sub-routine derives a minimum and mean round trip time and these values are graphically displayed against packet size on the output device," (lines 30-34 of column 7 in McKee).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to base the delay times on the minimum delay for each packet size. The minimum round-trip time delays for the various packet sizes provide an indication of the average queuing delay

for each size of packet. It is for this reason that one of ordinary skill in the art would have been motivated to base the delay times on the minimum delay for each packet size.

e. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas in view of Kahkoska et al. (U.S. 6,002,671) hereinafter referred to as Kahkoska.

Bournas teaches generating a plurality of data packets (lines 13-15 of column 6); sending data packets to first node (lines 34-36 of column 5); sending data packets to second node (lines 39-40 of column 5); receiving response message from nodes indicating receipt of data packets (lines 38-39 of column 5); generating delay times for packets to reach the nodes based on the received response messages (item 508 of FIG 5 and 602 of FIG. 6); estimating the bandwidth based on delay times (lines 34-55 of column 7, and items 614-618 of FIG. 6); and estimating the average available bandwidth over a short period of time (lines 59-62 of column 2).

Bournas fails to teach generating a known quantity of traffic at a location remote from host; and injecting said known quantity of traffic into the network. However, Kahkoska discloses: "sending of data traffic through the ADSL circuit at selected data rates according to a remote traffic generator protocol," (lines 18-20 of column 5 in Kahkoska).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to generate a known quantity of traffic at a location remote from the host and injecting said known

quantity of traffic into the network. The upstream and downstream data paths in the ADSL circuit, although operating according to the frequency division multiplexing scheme, may interact and interfere with each other to reduce the maximum available throughput. The throughput of the ADSL circuit therefore must be measured with traffic generated in both the upstream and downstream paths simultaneously in order to stress the ADSL circuit, therefore requiring two test instruments that are working on each end of the ADSL circuit in tandem (lines 23-31 of column 2 in Kahkoska). It is for this reason that one of ordinary skill in the art would have been motivated to generate and insert traffic at a location remote from the host in the system of Bournas, as taught by Kahkoska.

f. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas in view of Kahkoska as applied to claim 11 above, further in view of Barber (U.S. 6,285,972 B1).

Bournas does not teach sending K data sets from a traffic generator or estimating according to nonlinear regression.

However, Kahkoska and Barber disclose the constraints respectively:

Kahkoska discloses: "generating traffic through the downstream data channel at a specified data rate according to a remote traffic generator protocol," (lines 19-21 of column 6 in Kahkoska).

Barber discloses: "calculation of nonlinear regression models is well known in the art (lines 9-10 of column 8 in Barber).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to send K data sets from a traffic generator. The method may be modified to test any combination of upstream and downstream data rates in order to obtain a measure of throughput according to specific requirements (lines 60-64 of column 5 in Kahkoska). It is for this reason that one of ordinary skill in the art would have been motivated to send K data sets from a traffic generator as taught by Kahkoska.

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to estimate according to nonlinear regression. For instance, software programs can be used to calculate a neural network based on the random drive and response of the system (lines 11-14 of column 8 in Barber), based on nonlinear regression models. It is for this reason that one or ordinary skill in the art would have been motivated to estimate according to nonlinear regression as taught by Barber.

g. Claim 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas in view of Kahkoska and Barber as applied to claim 12 above, in further view of Huberman as applied to claim 6 above.

h. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas in view of Kahkoska as applied to claim 11 above. Official notice taken that both the concept and the advantages of calculating the available bandwidth using Bayesian point estimates and mean traffic rates are well known and expected in the art. It would have been obvious to calculate the available bandwidth using Bayesian point

estimates and mean traffic rates because using mean traffic rates in a Bayesian point estimate would allow utilization of previous trials or "known data" in the calculation.

i. Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 14 above, further in view of, in further view of Huberman as applied to claim 6 above.

j. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 11 above, further in view of Davies et al. (U.S. 6,483,805 B1) hereinafter referred to as Davies.

Bournas fails to teach traffic and router parameters being re-estimated upon changes in the network configuration or traffic conditions. However, Davies discloses: "Combining this information with the known statistical distribution of the data traffic relevant to the application creating the data, enables the router to form a statistical estimate of the current load on the network, and specifically the load on the next link in the network along which that data is transmitted" (lines 35-40 of column 8 in Davies).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to re-estimate traffic and router characteristic parameters upon changes in the network configuration or traffic conditions. The router can then use this traffic information to limit the total number of transactions in progress (lines 43-44 of column 8 in Davies). It is for this reason that one of ordinary skill in the art would have been motivated to re-estimate traffic and router characteristic parameters upon changes in the network configuration or traffic conditions.

k. Claims 18 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 17 above, further in view of Kahkoska.

Bournas teaches generating a plurality of data packets (lines 13-15 of column 6); sending data packets to first node (lines 34-36 of column 5); sending data packets to second node (lines 39-40 of column 5); receiving response message from nodes indicating receipt of data packets (lines 38-39 of column 5); generating delay times for packets to reach the nodes based on the received response messages (item 508 of FIG 5 and 602 of FIG. 6); estimating the bandwidth based on delay times (lines 34-55 of column 7, and items 614-618 of FIG. 6); and estimating the average available bandwidth over a short period of time (lines 59-62 of column 2).

Bournas fails to teach generating a known quantity of traffic at a location remote from host; and injecting said known quantity of traffic into the network. However, Kahkoska discloses: "sending of data traffic through the ADSL circuit at selected data rates according to a remote traffic generator protocol," (lines 18-20 of column 5 in Kahkoska).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to generate a known quantity of traffic at a location remote from the host and injecting said known quantity of traffic into the network. The upstream and downstream data paths in the ADSL circuit, although operating according to the frequency division multiplexing scheme, may interact and interfere with each other to reduce the maximum available throughput. The throughput of the ADSL circuit therefore must be measured with traffic

generated in both the upstream and downstream paths simultaneously in order to stress the ADSL circuit, therefore requiring two test instruments that are working on each end of the ADSL circuit in tandem (lines 23-31 of column 2 in Kahkoska). It is for this reason that one of ordinary skill in the art would have been motivated to generate and insert traffic at a location remote from the host in the system of Bournas, as taught by Kahkoska.

I. Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas as applied to claim 17 above, further in view of Kahkoska.

Bournas fails to teach an input/output interface for communication with and end-user enabling them to estimate total and available bandwidth between two nodes in a communications network. However, Kahkoska discloses: "The remote test instrument sends the downstream data traffic and returns the results of the throughput test in the form of frame counts from its end of the ADSL circuit back to the test instrument at end of the test sequence. The results from the upstream and downstream throughput tests are then visually displayed to the user of the test instrument," (abstract of Kahkoska).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that it is quite advantageous for the system of Bournas to include and input/output interface to allow an end user to estimate bandwidth. It would be desirable to provide a test instrument capable of testing an circuit, operating in tandem with a remote test instrument at the opposite end of the circuit, to provide a measurement of the throughput of the circuit (lines 33-37 of column 1 in Kahkoska). It is for this reason that one or ordinary skill in the art would have been motivated to include an input/output

interface for communication with and end-user enabling them to estimate total and available bandwidth between two nodes in a communications network.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Keshav (5,627,970) discloses methods and apparatus for achieving and maintaining optimum transmission rates and preventing data loss in a processing system network.

Dupont (5,729,542) discloses a method and apparatus for communications system access.

Qin et al. (6,393,480 B1) disclose application response time prediction.

Seddigh et al. (6,480,899 B1) disclose differentiated services IP quality of services round trip time aware intelligent traffic conditioner in an ingress node of virtual private networks.

Lee et al. (6,529,520 B1) disclose method and device for bandwidth allocation in multiple access protocols with contention-based reservation.

Iltis et al. (5,347,541) disclose apparatus and method for utilizing a blind equalizer based on a Bayesian symbol sequence estimator for use in digtial communication.

Fischer et al. (5,889,772) disclose a system and method for monitoring performance of wireless LAN and dynamically adjusting its operating parameters.

Matoba et al. disclose M-estimation, nonparametric estimation, and other statistical estimation methods.

Vesilo et al. disclose ATM and adaptive estimation.

Shiomoto et al. disclose connection admission control and statistical estimation.

Mathis et al. disclose congestion-aware transport connections.

Lakshman et al. disclose data drop and random early detection.

Shioda et al. disclose cell loss ration estimation and statistical estimation.

Erramilli et al. disclose Gaussian distribution and estimation.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Meucci at (703) 305-1382. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Harvey, can be reached at (703) 305-9705. The fax phone number for this Group is (703) 308-5358.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [michael.meucci@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published

in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Group receptionist whose telephone number is (703) 305-3900.

JACK B. HARVEY
SUPERVISORY PATENT EXAMINER